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Study on the feasibility of continuing the University of Montana M.B.A. Program in Great Falls

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A STUDY ON THE FEASIBILITY OF CONTINUING THE UNIVERSITY OF MONTANA M.B.A. PROGRAM IN GREAT FALLS

by

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

INTRODUCTION

The University of Montana has operated the Master of Business Administration Program at Malmstrom Air Force Base, through the Air Force Institute of Technology (A.F.I.T.), since the fall of 1968. The program was designed to be an incentive for Air Force Officers to volunteer for duty as Minuteman Missile Combat Crew Members (MCCM). The entire cost of the program was borne by the Air Force. A total of 74 missile officers registered for classes during Fall Quarter 1968. Spring Quarter 1969 saw the first three "non-MCCM military" students enroll. It was not until Summer Quarter 1976 that civilian students were allowed into the program. Three civilian students registered.

Since 1976, MCCM enrollment has declined due in part to "Project Rivet Save," the Air Force's 33 percent crew reduction plan, which began in 1977. By Summer Quarter 1978, registrations had reached a low of 34, compared to the Summer Quarter, 1977, total of 66. Since that time, MCCM registrations have remained stable with a slight downward trend. Non-MCCM military registrations have remained relatively steady, in the 5 - 10 student range, rising to the 10 - 15 student range since Winter Quarter 1986. Civilian participation has steadily increased in the past decade with

64 students pre-registered (47 percent of all students pre-registered) for Fall Quarter 1986. Increases in non-MCCM Military and Civilians attending this program are in no small way related to the scheduling of classes which is to say the least, flexible. Classes are currently held three days per week, Tuesday through Thursday, and vary from early afternoon, middle afternoon, to evening sessions. The student need attend only one session per class per week, averaging two and one-half hours per class session. This unique aspect of the program has civilian students commuting from as far away as Butte, some 170 miles.

On October 22, 1986 the Air Force informed the University that the A.F.I.T. - M.B.A. Program would be phased out over a period of several years, allowing those MCCMs in the program as of December 31, 1986, adequate time to complete their studies. This decision was made after a survey of MCCM officers at the six bases involved indicated substantial dissatisfaction with current post-graduate educational opportunities offered by A.F.I.T. Another factor, perhaps the most important factor was the escalating costs of the programs. For example, in Fiscal Year 1971 the cost to the Air Force per Department of Defense graduate degree awarded was $9,063. In Fiscal Year 1977 the cost was $10,374, a 14.5 percent increase. Estimated cost in Fiscal Year 1984

was $40,497, or an increase of 290.4 percent in the seven years since implementation of "Rivet Save."[1] Beginning in Fiscal Year 1985, tuition from civilian students has been rebated to the Air Force, thus decreasing its total program contract costs. Total contract costs to the Air Force for the A.F.I.T. - M.B.A. Program at Malmstrom have actually declined since Fiscal Year 1984 due to this rebate. Total rebate for Fiscal Year 1987 should approach $100,000.

In place of the A.F.I.T. - M.B.A. Programs, a voucher system has been created whereby MCCMs will be reimbursed for their educational expenses. It has now been determined that the end of the Program will be June 30 or September 30, 1990. Appendix A is a "Talking Paper on Missile Crew Member Education Program" and contains pertinent details of the Air Force plan.

The purpose of this paper is an attempt to determine if it is feasible for the University to continue offering the M.B.A. in Great Falls, and what, if any, changes would be necessary.

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[1] Department of the Air Force, Air University, A.F.I.T., Minuteman Education Program Three Year Plan FY 79 - 81, "Approximate MMEP Contract Costs FY 71 - FY 77, page 3-31, and Minuteman Education Program Three Year Plan FY 86 - 88, Cost Per Enrollee, Per DOD Graduate, page 3-26.

CHAPTER I

THE CURRENT STATE OF THE M.B.A. PROGRAM

To gain an understanding of the A.F.I.T. - M.B.A. program, an examination of the budget, expenditures, and registration figures was required.

The Budget

The budget is divided into four major areas: salaries, fringe benefits, indirect costs, and direct cost.

Salaries include all employees, both contracted and hourly. There are currently six full-time faculty (one of which is also Resident Administrator). In addition, there is one slot for Visiting Faculty who instruct in specialized areas, such as Business Law. Other positions include a Computer Center Manager, an Administrative Assistant, and the part-time positions of Secretary (two), Library Technician, and Custodian.

Fringe benefits consist of six areas: Social Security; faculty and staff retirement; health insurance; unemployment compensation; industrial accident insurance; and annual leave, sick leave, and termination pay.

Indirect cost, consist solely of overhead expenses and are calculated by multiplying total salaries by a rate set by the U.S. Department of Health and Human Services. The present

rate is 17 percent of wages and salaries.

Direct costs is a catch all for anything not covered by the other three categories. Items include: supplies and materials; communications; job candidate expense; relocation expense; travel; tuition; rent; library books; repair and maintenance; equipment; and contracted services. It should be noted that rent refers only to the rental of computers and a copy machine, and does not include building rent. The Air Force has provided the program with its own building, and there has been no charge for utilities.

A look at the budget figures (see Table 1) for these years shows that most of the budget is salary and fringe benefits. The total budget has increased by 43.5 percent since FY 82. From October 1981 to October 1986 the Consumer Price Index for urban consumers rose only 18.1 percent, all items included.[2] While this budget increase may seem quite large in this comparison, using another gauge proves enlightening. With college tuition taken as an isolated cost, there emerges a different picture. As can be seen in Table 2, the CPI for college tuition has risen sharply, from 148.2 in October 1981 to 227.6 in October 1986, for an increase of 53.6 percent. Total salaries and fringe benefits have increased from 75.3 percent of the budget in FY 82 to 81.8 percent in FY 87. Fringe benefits increased from 11.3 percent

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[2]U.S. Department of Labor, Bureau of Labor Statistics, CPI Detailed Report, October 1981 through March 1987.

TABLE 1

BUDGET FIGURES FOR FISCAL YEARS 1982 - 1987 (IN DOLLARS).

	Salaries	Fringe Benefits	Total SF	Direct Costs	Indirect Costs	Total
FY 82	244,710	43,110	287,820	48,438	46,067	382,325
FY 83	284,685	51,351	336,036	46,010	52,340	434,386
FY 84	299,803	58,596	358,399	51,878	63,183	473,460
FY 85	316,856	62,289	379,145	56,978	53,549	489,672
FY 86	338,005	73,744	411,749	57,100	51,111	519,960
FY 87	366,147	76,997	443,144	51,950	52,045	548,689

SOURCE: University of Montana, Malmstrom MMEP Budgets, Fiscal Years 1982 - 1987, A.F.I.T. Detachment No. 5.

TABLE 2

COLLEGE TUITION
CONSUMER PRICE INDEX, OCTOBER 1981 THROUGH MARCH 1987, SELECTED MONTHS.(1977=100)

	CPI	Percent Change, 12 mo. previous
March 1987	236.1	7.7
January 1987	233.1	7.8
October 1986	227.6	7.8
March 1986	219.3	8.6
January 1986	216.3	8.7
October 1985	211.2	8.5
March 1985	201.9	9.1
January 1985	198.9	10.1
October 1984	194.6	10.3
March 1984	185.1	10.6
January 1984	180.7	9.6
October 1983	176.5	5.8
March 1983	167.3	11.0
January 1983	164.9	10.0
October 1982	166.8	12.6
March 1982	150.7	
January 1982	149.9	
October 1981	148.2	

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, CPI Detailed Report, "Consumer Price Index for Urban Consumers: Non-food Expenditure Categories, Seasonally Adjusted, U.S. City Average, Personal and Educational Services, College Tuition."

NOTE: As of January 1987, the appropriate section title is, "Detailed Expenditure Categories, Seasonally Adjusted, U.S. City Average."

to 14.0 percent in the same period. The greatest increase in salaries was in FY 83 when faculty size was increased by one position to the present six. Budgeted direct costs have remained relatively low, increasing 17.9 percent from FY 82 to FY 86 then dropping 9.0 percent in FY 87 due largely to terminating the lease of computer equipment. As a percent of budget, direct costs have declined from 12.7 percent in FY 82 to 9.5 percent in FY 87.

Expenditures

Actual expenditures for FY 82 through FY 86, as shown in Table 3, have increased 27.5 percent with fringe benefits increasing 61.1 percent and accounting for 18.8 percent of total salaries and fringe benefits in FY 86, up from 15.2 percent in FY 82. Salaries rose 24.5 percent in this period, and actually declined from FY 85 to FY 86. Total faculty salary has two relevant components. The first is faculty size and the second is the academic status of the instructor. As can be seen in Table 4, both factors have recently changed.

The greatest percentage increase occurred in FY 83, when faculty salaries increased 20.1 percent due to changes in both factors. FY 86 saw the only decline in faculty salary, coming in 6.3 percent below the previous year total. Total salaries and fringe benefits varied over this period from 75.0 percent to 78.2 percent. As total salaries has a direct impact on the costs of fringe benefits and indirect costs, the importance of this area to total program costs is

TABLE 3

EXPENDITURE FIGURES FOR FISCAL YEARS 1982 - 1986 (IN DOLLARS).

	Salaries	Fringe Benefits	Total SF	Direct Costs	Indirect Costs	Total
FY 82	235,164	42,106	277,270	39,779	44,662	361,711
FY 83	270,018	48,821	318,839	50,020	53,539	422,398
FY 84	299,963	58,504	358,467	52,912	50,873	462,252
FY 85	312,765	63,253	376,019	71,500	53,680	501,198
FY 86	292,869	67,843	360,713	50,656	49,788	461,157

SOURCE: "Public Voucher for Purchases and Services Other Than Personal," Malmstrom Minuteman Education Program, A.F.I.T. Detachment No. 5.

underscored.

TABLE 4

Size and Academic Status of A.F.I.T. - M.B.A. Faculty

	Professor	Assoc. Prof.	Assist. Prof.	Total
FY 82	1	3	1	5
FY 83	3	1	2	6
FY 84	3	1	2	6
FY 85	3	1	2	6
FY 86	2	0	4	6
FY 87	2	1	3	6

SOURCE: University of Montana, Malmstrom MMEP Budgets, Fiscal Years 1982 - 1987, A.F.I.T. Detachment No. 5.

Direct cost increases appear high in two years. In FY 82, these costs came in well below budgeted figures, thus making the FY 83 figure (an increase of 25.7 percent over FY 82) appear high. In FY 85, the purchase of computers and software was made late in the year out of funds set to be de-obligated to the Air Force, and with Air Force concurrence. With the exception of FY 85, direct costs as a percentage of total costs have remained between 11 percent and 12 percent.

Registration Figures

Total enrollment in the M.B.A. Program as of April, 1987, was 162. This figure represents all students who have registered for classes in the past 12 months and seem likely to continue in the program. Table 5 is a breakdown of the numbers of students registered and credits taken each quarter by MCCM's, non-MCCM military, and civilians. A look at these

Table 5

Students Registered and Credits Completed.

QUARTER	MCCM STUDENTS	MCCM CREDITS	NON-MCCM MILITARY STUDENTS	NON-MCCM MILITARY CREDITS
FALL 1976	116	629	11	57
WINTER 1977	106	577	8	81
SPRING 1977	86	444	9	44
SUMMER 1977	66	352	8	50
FALL 1977	74	373	9	36
WINTER 1978	73	443	7	27
SPRING 1978	62	311	4	19
SUMMER 1978	34	158	4	19
FALL 1978	47	253	7	35
WINTER 1979	58	322	8	42
SPRING 1979	51	263	8	37
SUMMER 1979	30	180	4	18
FALL 1979	56	313	6	19
WINTER 1980	50	268	10	53
SPRING 1980	45	203	9	32
SUMMER 1980	38	159	4	15
FALL 1980	49	213	7	27
WINTER 1981	52	246	8	28
SPRING 1981	56	326	11	61
SUMMER 1981	48	251	6	37
FALL 1981	51	277	10	50
WINTER 1982	57	273	9	60
SPRING 1982	53	275	9	65
SUMMER 1982	44	196	10	51
FALL 1982	59	347	5	39
WINTER 1983	49	289	10	56
SPRING 1983	52	252	5	20
SUMMER 1983	36	163	4	25
FALL 1983	59	312	5	29
WINTER 1984	55	313	5	37
SPRING 1984	42	254	7	39
SUMMER 1984	39	173	7	40
FALL 1984	41	195	7	34
WINTER 1985	36	212	6	37
SPRING 1985	40	210	10	51
SUMMER 1985	40	200	7	30
FALL 1985	53	269	8	45
WINTER 1986	42	253	13	72
SPRING 1986	40	222	9	52
SUMMER 1986	41	224	11	60
FALL 1986	50	265	12	80
WINTER 1987	54	296	12	65
SPRING 1987	51	297	14	83

SOURCE: Registration lists, A.F.I.T.- M.B.A. Program.

Table 5 - Continued

QUARTER	CIVILIAN STUDENTS	CIVILIAN CREDITS	TOTAL STUDENTS	TOTAL CREDITS
FALL 1976	10	41	137	727
WINTER 1977	6	22	129	680
SPRING 1977	8	27	103	515
SUMMER 1977	2	6	76	408
FALL 1977	7	39	90	448
WINTER 1978	11	64	91	534
SPRING 1978	10	54	76	384
SUMMER 1978	6	21	44	198
FALL 1978	15	77	69	365
WINTER 1979	18	87	84	451
SPRING 1979	13	67	72	367
SUMMER 1979	11	45	45	243
FALL 1979	24	139	86	471
WINTER 1980	19	101	79	422
SPRING 1980	19	109	73	344
SUMMER 1980	14	70	56	244
FALL 1980	27	130	83	370
WINTER 1981	27	147	87	421
SPRING 1981	26	135	93	522
SUMMER 1981	21	113	75	401
FALL 1981	36	183	97	510
WINTER 1982	32	150	98	483
SPRING 1982	25	103	87	443
SUMMER 1982	24	108	78	355
FALL 1982	34	206	98	592
WINTER 1983	36	218	95	563
SPRING 1983	34	176	91	448
SUMMER 1983	25	154	65	342
FALL 1983	45	244	109	585
WINTER 1984	49	262	109	612
SPRING 1984	42	213	93	506
SUMMER 1984	29	129	75	342
FALL 1984	43	238	91	467
WINTER 1985	43	209	85	458
SPRING 1985	48	258	98	519
SUMMER 1985	21	102	68	332
FALL 1985	41	227	102	541
WINTER 1986	44	230	99	555
SPRING 1986	44	221	93	495
SUMMER 1986	35	169	87	453
FALL 1986	59	313	121	658
WINTER 1987	64	371	130	732
SPRING 1987	61	355	126	735

figures shows the cyclical nature of registrations and trends within each group.

The cyclical pattern is evidenced by the numbers of students attending each quarter. Summer quarter is usually the least attended among all three groups. MCCM registration shows a marked preference for fall quarter, non-MCCM military favoring either winter or spring quarters, and civilians preferring winter quarter. As a group, students show a slight preference for fall quarter over winter quarter. Using the seasonal indices from Appendices B through I as benchmark of the relative utility each group has for particular quarters changes the picture somewhat. MCCM's and non-MCCM military show a preference for winter quarter, while civilians strongly favor fall quarter. Summer quarter is the unanimous choice of all three groups as having the least utility.

Each group of students has developed its own pattern over the past ten years. Figures 1 through 8 are graphic representations of student and credit registration data since fall quarter 1976 and correspond, respectively, with Appendices B through I. The "Observed" line corresponds with Column D for each of the Appendices. The "Trend" line is calculated by using the Least Squares Method on observed values. The horizontal axis represents periods, quarters, referenced in the Appendices. The vertical axis represents students or credits, whichever is appropriate to each graph.

Figures 1 and 2 show the rapid decline in the number of

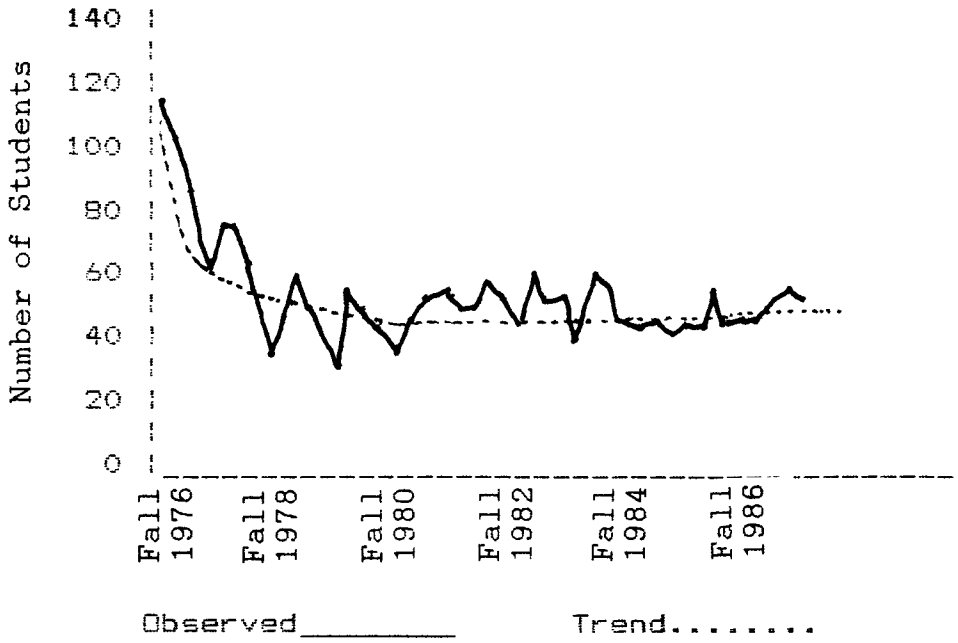

Fig. 1. MCCM Students Registered, Fall 1976 - Spring 1987.

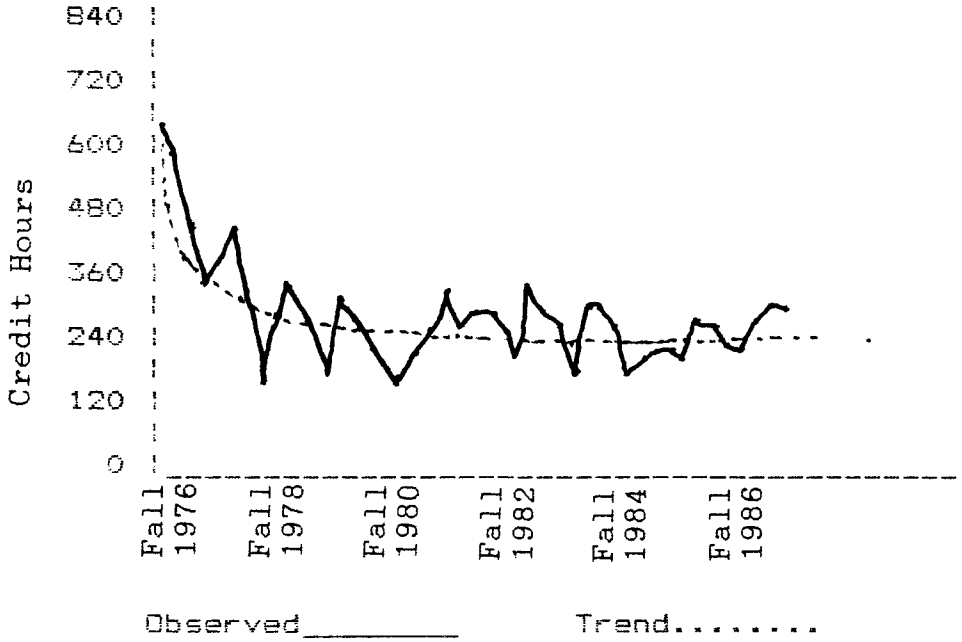

Fig. 2. MCCM Students Quarter Credit Hours, Fall 1976 - Spring 1987.

MCCM students from Fall 1976 through Summer 1978. However, since that time, enrollments have remained relatively stable. Total registrations for fiscal years 1981 through 1984 averaged near 200 per year, but dropped by almost 20 percent in FY 1985 to 157. This drop actually began in spring quarter, 1984 and continued, with the exception of fall quarter, 1985, through summer quarter, 1986. A look at the MMEP Quarterly Reports offers a possible explanation of this drop. A large number of MCCM's (22) were in Permanent Change of Station (PCS) status before Spring Quarter began, and new students were more than offset by withdrawals and graduates. Registrations thus far in fiscal year 1987 have rebounded from this period of low registration and appear headed toward a yearly total near 200, with total credit hours near 1,100.

Figures 3 and 4 represent the non-MCCM military students participation. While only a small portion of all students, the important point here is the rapid increase shown in the past two years as reflected by both observed values and the trend line. Registrations for FY 1986 were 37 percent higher than the previous year, with total credit hours up by 51 percent. The first three quarters of FY 1987 have almost equalled FY 1986 totals in both credit hours and students registered. The trend line indicates more of the same for the future.

Figures 5 and 6 represent the civilian participation. From rather humble, space available status in the beginning,

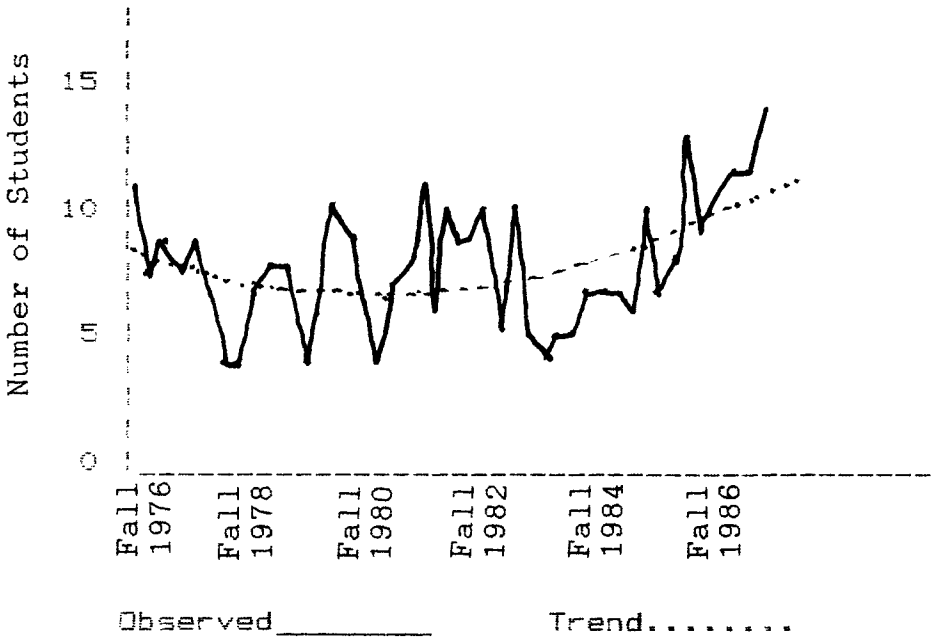

Fig. 3. Non-MCCM Military Students Registered, Fall 1976 - Spring 1987.

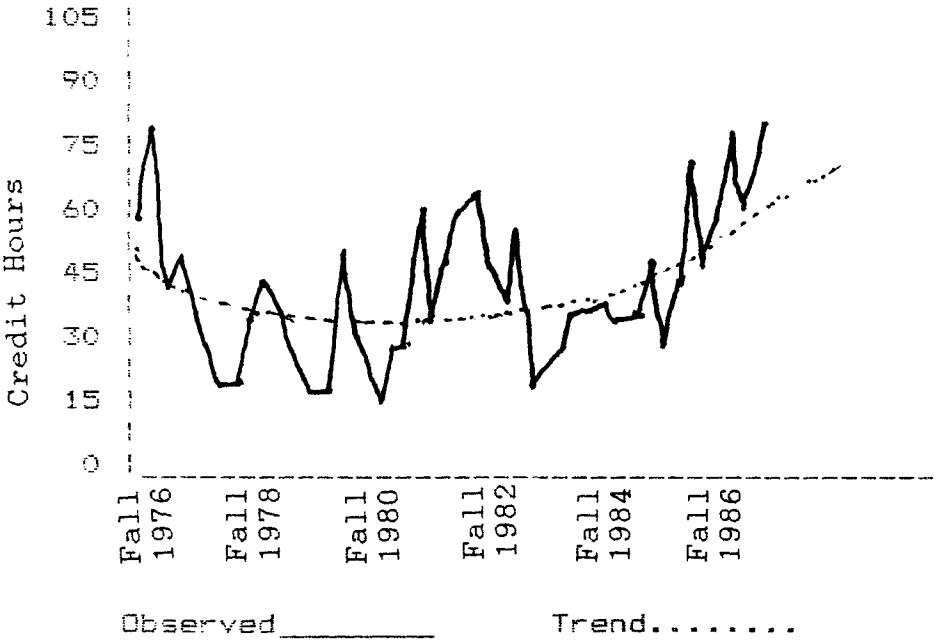

Fig. 4. Non-MCCM Military Students, Quarter Credit Hours, Fall 1976 - Spring 1987.

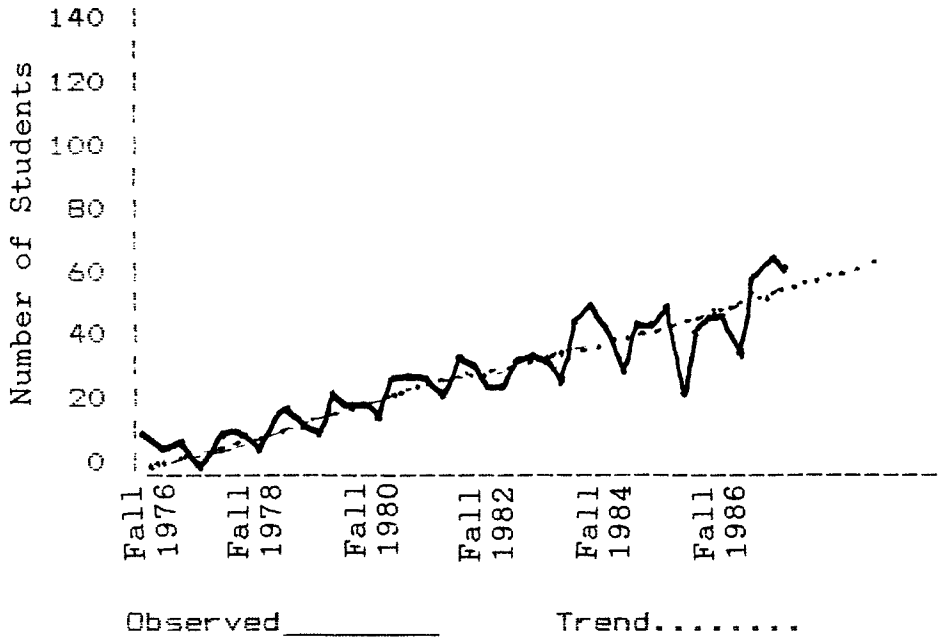

Fig. 5. Civilian Students Registered, Fall 1976 - Spring 1987.

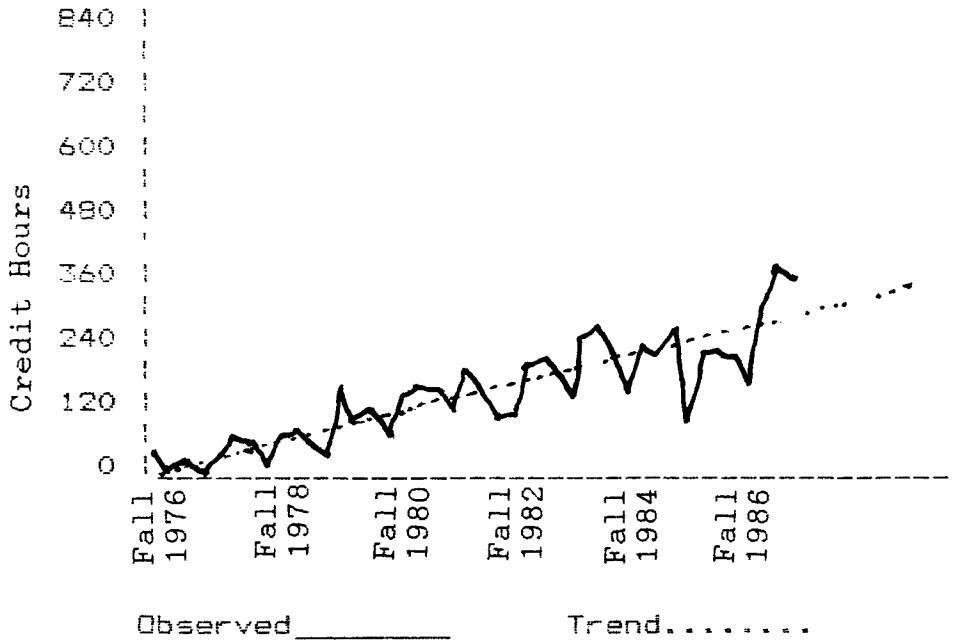

Fig. 6. Civilian Quarter Credit Hours, Fall 1976 - Spring 1987.

this group has been allowed a greater presence since then and is now the largest of the three groups. The cyclical nature of the civilian student is evidenced by the low enrollments each summer. While annual civilian student registration increased 40 percent from FY 1982 to FY 1986, the first three quarters of FY 1987 show an increase of over 42 percent for the same period last year. Total credit hours for civilian students have increased 53.2 percent over the same period, and are projected to be near 1,300 for the entire year.

Taking the three groups and lumping them together gives the overall figures summarized in Appendix H and Appendix I, the graphic representations being Figures 7 and 8. The effect of "Project Rivet Save" on the total registration and credit hours figures is readily apparent through period 8. Since that time, however, there has been a gradual increase in both totals. Annual registrations were at the lowest point in FY 79 with 270 student registrations totaling 1,426 credit hours. The next five fiscal years saw increases in these totals, peaking in FY 84 with 349 student registrations totaling 2,045 credit hours. Totals declined in FY 85 due in large part to MCCM attrition but rebounded in FY 86 to FY 84 levels. The current fiscal year has shown growth from all three groups, with student registrations up 28 percent and credit hours up 33 percent over the first three quarters of FY 86. The current fiscal year is expected to end with approximately 450 student registrations and 2,700 credit

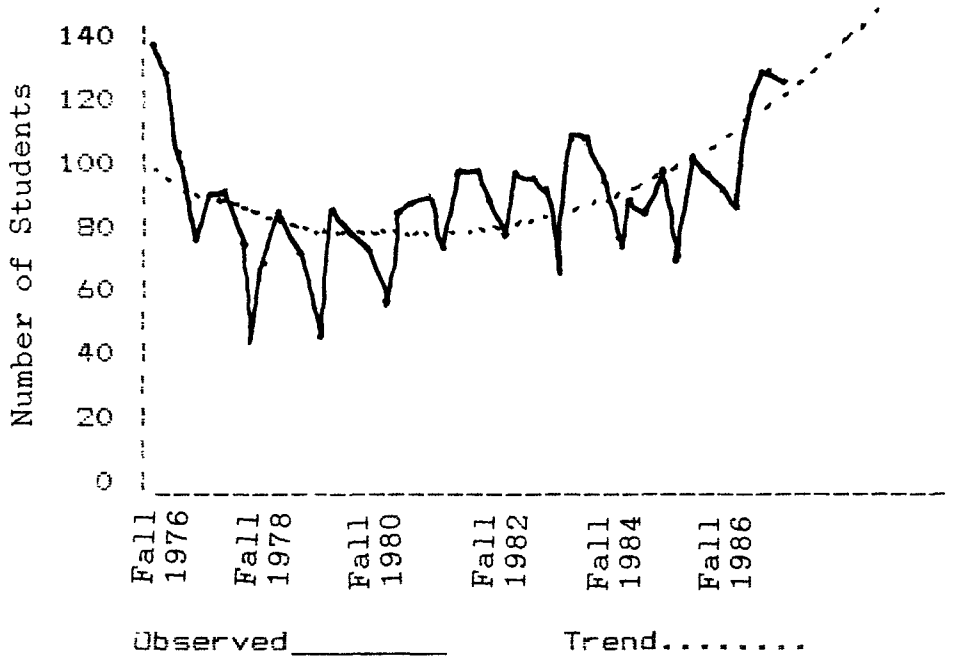

Fig. 7. All Students Registered, Fall 1976 - Spring 1987.

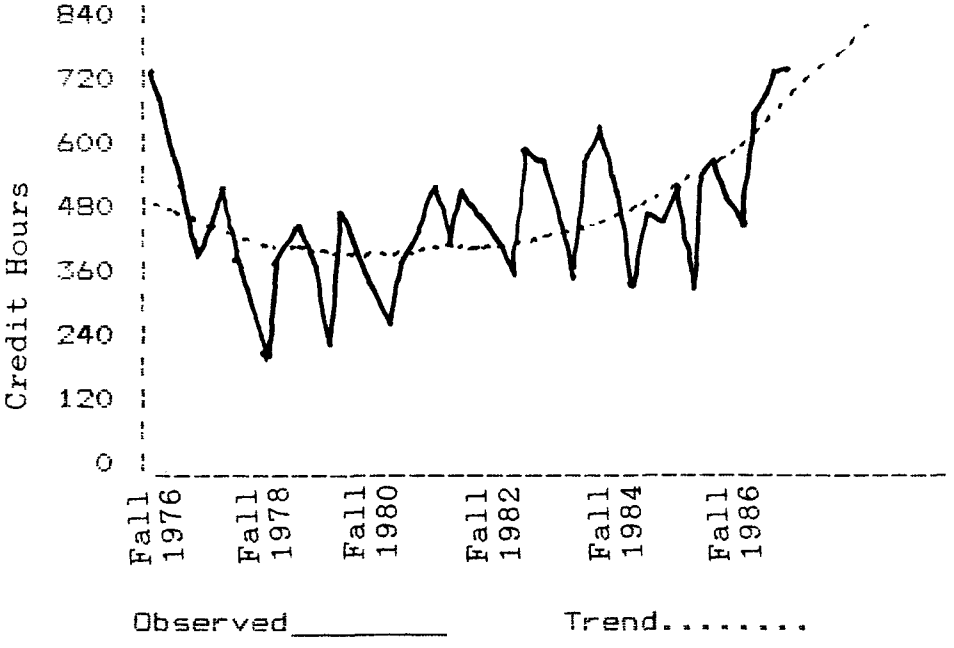

Fig. 8. All Students, Quarter Credit Hours, Fall 1976 - Spring 1987.

hours, the highest in the program's history.

Projected Registration

Using the information contained within Appendices B through G, an estimate of future registration can be made by using classical decomposition on the quarterly figures provided in each of the Appendices. The decomposition will yield a seasonally adjusted value for each of the quarters. Using the Least Squares Method, a seasonally adjusted forecast is made. A seasonal index for each of the quarters, Fall, Winter, Spring, and Summer, has been then made. "The index is defined as the ratio of the actual value of the time series to the average for the year."[3] The forecast figure is the product of the deseasonalized figure and the seasonal index for each quarter. The equations used for each group vary based on the highest R-Squared (R^2) value for each data set utilizing the Stat+ statistical analysis system.[4]

The equation for MCCM Student Registration is Y = A+B/X with a R^2 of .74745, Standard Error of 7.85940, A =44.72858, B = 78.65855, and X = the Deseasonalized Value. MCCM Quarter Credit Hours utilize the same equation with a R^2 of .70196, Standard Error of 48.00456, A = 234.53350, and B = 428.59480.

The non-MCCM Military Student Registration and Quarter

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[3]Richard I. Levin, David S. Rubin, and Joel P. Stinson, Quantitative Approaches to Management, 6th ed. (New York:McGraw-Hill Book Company, 1986), page 128.

[4]Geoffrey Churchill, Stat+, (Houghton Mifflin Co., 1986).

Credit Hour equation is Y = A+BX+CX^2, with a R^2 of .29517, Standard Error of 2.15236, A = 9.16310, B = -.28304, and C = .00784 for Student Registration and a R^2 of .33796, Standard Error of 14.35299, A = 51.41070, B = -2.03323, and C = .05690 for Quarter Credit Hours.

The Civilian Student Registration equation is the same as the non-MCCM Military equation, with a R^2 of .91080, Standard Error of 4.68185, A = 2.62869, B = 1.17846, and C = -.00069. The Quarter Credit Hour equation is Y = A + BX with a R^2 of .86847, Standard Error of 31.87860, A = 7.72842, and B = 6.36653.

Forecast data through Fiscal Year 1989 for the three groups are listed in Table 6. These quarterly figures are obtained by multiplying the value of the equation by the Seasonal Index for that quarter. It is apparent that there will not be any surprises in the near future. The increases seen in the first three quarters of Fiscal Year 1987 for all three groups have influenced the trend for civilians and non-MCCM military more so than for the MCCM which shows a leveling at or slightly below current levels.

Three measures will be used to evaluate the reliability of this forecast: Mean Absolute Deviation (MAD), the Square Root of the Mean Squared Error, and the Mean Absolute Percentage Error (MAPE). Appendix J is an overview of the technique and rationale for use of each of these measures. These measures are tabulated from Fall, 1976, and Fall, 1981,

TABLE 6

REGISTRATION FORECAST THROUGH FY 1989

Quarter	MCCM	Non-MCCM Military	Civilians	Total
Student Registration				
Summer 1987	38	10	34	82
Fall 1987	50	12	66	128
Winter 1988	50	14	62	126
Spring 1988	48	14	57	119
Summer 1988	38	11	37	86
Fall 1988	50	14	72	136
Winter 1989	50	16	67	133
Spring 1989	47	16	62	125
Summer 1989	38	13	40	91
Quarter Credit Hour Registration				
Summer 1987	189	59	169	417
Fall 1987	259	71	372	702
Winter 1988	276	93	346	715
Spring 1988	252	86	306	644
Summer 1988	188	70	184	442
Fall 1988	259	83	405	747
Winter 1989	275	109	375	759
Spring 1989	251	101	331	683
Summer 1989	187	82	199	468

in Table 7 in order to compare more recent data with that from the entire period under examination. Changes in the MAD and Square Root of the MSE for MCCM and Civilians could be related to the changes in their numbers over this time period, as the greater the number of students, the greater the potential error in forecasting. MCCM students have been in decline since the beginning period of this study and civilians have been increasing. Non-MCCM military increases have taken the same direction as civilians, as both are

TABLE 7

FORECAST RELIABILITY MEASURES

Group	MAD Since Fall 76	MAD Since Fall 81	Sq.Root of MSE Fall 76	Sq.Root of MSE Fall 81	MAPE Fall 76	MAPE Fall 81
Student Registration						
MCCM	6.09	4.83	7.46	5.97	11.95	10.77
Non-MCCM						
Military	1.67	1.87	2.03	2.16	24.59	26.19
Civilian	3.21	4.61	4.31	5.55	15.88	12.33
Quarter Credit Registration						
MCCM	37.23	26.74	45.32	34.91	14.05	11.08
Non-MCCM						
Military	11.72	12.17	13.79	13.91	32.50	28.04
Civilian	21.26	30.61	29.28	38.04	20.47	15.51

increasing as a percentage of students. MAPE trends have been toward a smaller percentage error since 1981, with one exception, reflecting in part the relatively more stable registration figures, as mentioned above. Also, a more accurate forecast is possible in later periods due to the first few periods being used as sampling periods.

It should be remembered that the values in Table 7 can be interpreted as either positive or negative in value as absolute or squared values are being considered. Thus, the forecast in Table 6 is only a estimate and could be higher or lower.

CHAPTER II

GREAT FALLS M.B.A. STUDENT SURVEY

In order to find out just who the average Great Falls M.B.A. student is, and what preferences and opinions he possesses, a survey was conducted of all students in the program as of May 1, 1987. Permission to conduct the survey was obtained by Cpt. James A. Fogelberg, A.F.I.T. Detachment Commander. With the assistance of Sharon Pickering, program Administrative Assistant, an updated list of those students currently in the Program and likely to continue with the Program was developed. Appendix J is a copy of the survey questionnaire distributed to the 162 students on the updated list. The questionnaire was distributed during the period of May 12 to 22, 1987. A cutoff date of June 22 was chosen. A total of 142 questionnaires were returned for a 87.7 percent response rate. Of the 126 students registered for spring quarter, 116 questionnaires were returned for a 92.1 percent response rate. Those inactive during spring quarter had a response rate of 72.2 percent (26 of 36).

Analysis of the data begin with Question 12 in order to establish the demographics of the groups, then take, in order, Questions 1 through 11.

Question #12. For the purposes of this survey, the student population was divided into three basic groups:

military, military dependent civilian, and civilian. There were 70 military respondents out of 88 (79.5 percent), six military dependent civilian and 66 civilian respondents, out of a possible 74 non-military students, for a 97.3 percent response rate. Due to the small size of the military dependent civilian category, it was combined with the civilian category, and referred to as civilians for the rest of this analysis.

The age spread for the military students ranged from 22 to 39 with 51 (72.9 percent) falling in the 24 - 30 age group. The largest single group was 24 years old, with 14 members. The civilian category has broader representation. The range of reported ages was from 24 to 52 with two persons not responding. The largest single group, ten, was 33 years old and was the upper limit of the largest block of civilian students, those 24 to 33 years old, accounting for 58.6 percent (41 out of 70) of those reporting. Those 40 or older account for 25 percent of civilian respondents. Table 8 summarizes age data for both groups.

TABLE 8

AGE GROUPS OF SURVEY RESPONDENTS

Age	Military	Civilian	Total
21 - 24	18	1	19
25 - 29	30	17	47
30 - 34	15	24	39
35 - 39	7	10	17
40+	0	18	18
TOTALS	70	70	140

Question #1. How did you first learn about the M.B.A. program in Great Falls?

Military responses were as follows:

(27) Base Education	(7) Friend
(5) Detachment Commander	(4) Co-worker
(1) University Representative	(3) Employer
(0) University Catalog	(23) Other

The importance of Base Education to this group is obvious, accounting for 38.6 percent of responses. The Other responses had an opportunity to give an alternative not listed. The most frequent reply was R.O.T.C. while in college (11). Other replies noted various Air Force personnel and literature. Two persons found out about the program by seeing the building.

Civilian responses were as follows:

(3) Base Education	(27) Friend
(1) Detachment Commander	(20) Co-worker
(4) University Representative	(2) Employer
(4) University Catalog	(11) Other

The combination of Friend and Co-worker provided 65.3 percent of responses. The Other option included relatives, phone inquiries, College of Great Falls personnel, and Great Falls Tribune articles. The importance of word-of-mouth is quite apparent. Military dependent civilians accounted for three of the responses in the Friend category, and one each to Base Education, Detachment Commander, and University Catalog.

Question #2. Why did you decide to attend here instead of Missoula?

Of the 142 responses, 121 (85.2 percent), indicated that they were unable to relocate due to commitments, 10 preferred

the Great Falls program, and 11 had other reasons.

Military responses were predicatable, with all responding one way or another that they were here due to Air Force commitment and could not attend class in Missoula. Here the written responses were interesting. One indicated he was here due to Malmstrom and in the program because the "price is right." Another claimed, "Resident centers usually have higher caliber of instruction." Finally, one came right to the point and stated that the program was here to provide missile officers an education and, therefore, there was no need to go to Missoula.

Civilians indicated that 73.6 percent (53/72) were unable to relocate, with 13.9 percent (10/72) preferring the Great Falls program. Those commenting on the Great Falls preference noted that the program allowed them to take their classes on one day each week, and that the choice of different times during the week was also very important as they could continue with a full-time job while attending school. One local resident stated, "The usual college scheduling would not work for me." As will be seen from responses to Question #5, 17 of the responding students commute 50 or more miles one-way to school, thus, the ability to take all classes on one day was a very important factor to them. Other comments basicly echoed the above comments. One stated that the Missoula campus didn't offer a graduate degree program for those with limited time due to work

commitments. Another noted that night classes were not available in Missoula. All written responses mentioned the ability to continue working while going to school was the prime criteria.

Question #3. In what year did you receive your Bachelor's degree?

Military respondents are heavily weighted to more recent years, as would be expected when compared with age responses, with 82.6 percent (57/69) graduating in the 1980s. The top four years are 1985 (13), 1984 (12), 1982 (10), and 1981 (9).

The civilian responses were fairly evenly spread from 1961 to 1986. Eight graduated in the 1960s, 36 in the 1970's, and 28 in the 1980's. The largest single group was 1978 with seven. The years 1977 to 1984 account for 54.2 percent (39/72) of responses.

Question #4. What was your undergraduate major?

Military students have a wide variety of undergraduate education with 32 different non-business majors. Some of the more common types of studies included engineering (7), math (4), computer science (3), criminal justice (4). Those with a business or business related background (including economics) accounted for 35.7 percent (25/70).

Civilian students accounted for 25 non-business undergraduate majors, among them were engineering (7), nursing (7), and microbiology (3). Business and business related majors accounted for 50 percent (36/72).

Question #5. To the nearest mile, how far is the one-way commute from home to school?

TABLE 9

ONE-WAY COMMUTING DISTANCE

Miles	Military	Civilian	Total
1 - 5	59	27	86
6 - 10	8	19	27
11 - 15	2	5	7
16 - 20	0	1	1
21 - 25	1	1	2
26 - 30	0	0	0
31+	0	18	18
Total	70	71	141

Basic differences do exist in this area as well. Of the 59 (84.3 percent) military living within five miles of the school (see Table 9), 19 (27.1 percent) live one mile away (base housing). Civilians tend to be more evenly spread about the area with only 38 percent within five miles of the school However, of those civilians living in the Great Falls area 86.8 percent live within ten miles of the school. Those not residents of the Great Falls area generally commute very long distances. Only two live less than 75 miles out of town. The rest are as follows: 90 miles (2); 100 miles (6); 110 miles (2); 150 miles (2); 170 miles (4). These are the people mentioned in Question #2 as needing the one day class schedule, for obvious reasons.

Question #6. On average, the number of classes I take per quarter is: ( )one ( )two ( )three ( )four

Out of a total of 139 responses, 45 averaged one class per quarter, 88 averaged two, while six claimed three. Assuming three credits per class, the average credits per student would be 5.16.

Military students were divided as follows: one (18), two (51), three (1), for an average of 5.53 credits per student. The civilian students were divided as follows: one (27), two (37), three (5), for a 5.04 credit per student average.

A comparison with actual figures averaged for Fiscal Years 1985 and 1986 shows a close relationship. The average for all students during this period was 5.28 credits. Military students averaged 5.36 credits and civilians averaged 5.18 credits. Actual figures include credits from several four credit classes at the 500 level, so these figures should be somewhat higher than the assumed.

Question #7. When do you anticipate completing your M.B.A. degree requirements?

The response rate to this question was one of the lowest of all questions. Out of the 130 responses, the spread of answers was pretty evenly divided over the next eleven quarters with 121 (93.1 percent) expecting completion by the end of fall quarter, 1989. The estimated completions through Fall, 1989, are nearly identical, with 93.9 percent (62/66) of Military and 92.2 percent (59/64) of civilians expecting to be finished by then. The civilian completion dates are loaded more toward the near future with 50 percent (32)

2expecting to finish by spring, 1988; 60.6 percent (40/66) of military students should finish between spring, 1988, and fall, 1989. The following is a breakdown of expected completions through fall quarter, 1989:

Spring 1987 - 11		Fall 1988 - 17	
Summer 1987 - 12		Winter 1989 - 4	
Fall 1987 - 7		Spring 1989 - 18	
Winter 1988 - 10		Summer 1989 - 5	
Spring 1988 - 14		Fall 1989 - 17	
Summer 1988 - 6			

Question #8. The days and/or times that I could not attend class are:

Answers to this Question #8 are summarized in Table 10. A value of one was given negative responses. The mean values for each combination of day and time are given. All 142 respondents answers are included. Thus, a value of .500 would indicate one-half of the respondents could not, or would not attend class during that time period.

Military students reaction to this question hinged on the type of work each performed. Due to the relatively large number of MCCM students in this category, the results reflect their preferences. The majority of respondents made note on the questionnaire that they were missile officers and did not know what their schedule would be very far in advance. Several stated that as long as classes met three times during the week it was usually, possible to make it to class. A look at Table 10 shows that slightly more than one-half of the 70 respondents would not attend Sunday mornings. Sundays showed the most negative responses, followed by Saturdays. Weekday

TABLE 10

STUDENT AVAILABILITY, VARIOUS TIMES AND DATES

Times	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Military							
9A - 12P	.514	.243	.229	.243	.229	.286	.357
12P - 3P	.457	.200	.157	.171	.157	.243	.329
3P - 6P	.457	.071	.043	.043	.043	.171	.329
6P - 9P	.457	.043	.014	.014	.000	.186	.329
Civilians							
9A - 12P	.528	.569	.542	.514	.514	.514	.375
12P - 3P	.458	.444	.389	.389	.403	.417	.333
3P - 6P	.444	.264	.264	.250	.264	.347	.361
6P - 9P	.403	.083	.069	.056	.069	.194	.319
All Students							
9A - 12P	.521	.408	.387	.380	.373	.401	.366
12P - 3P	.458	.324	.275	.282	.282	.331	.331
3P - 6P	.451	.169	.155	.148	.155	.261	.345
6P - 9P	.430	.063	.042	.035	.035	.190	.324

responses generally show more dislike for morning classes, and a preference for afternoon and evening classes. Reactions to Friday classes is more negative than any other day regardless of time.

Civilians preference for weekend classes resembles that of the military with Sunday night class being a bit more palatable. Weekday preferences are clearly for evening classes with more resistance as times get earlier. The least liked time period among the 72 respondents is Monday morning. Morning classes, regardless of day, showed the most negative responses. As with the military student, resistance grows on Friday.

Taken together, results summarize the highlights from each separate group. Sunday had the most overall negative responses, followed by weekday mornings and Saturdays. The most acceptable periods are weekday evenings. Resistance increases to earlier periods and Fridays.

Question #9. Currently, tuition is $75/credit. At what level ($/credit) would you consider the tuition too expensive and opt not to attend? $75 $80 $85 $90 $95 $100+

This question had the highest no-response rate with 24. Military students accounted for 20 of these with 16 of the 20 conditioning their non-response with comments such as "not applicable" (7), the "Air Force pays" the tuition (5), would need to "comparison shop" (2), has "no import" or is "totally immaterial" regarding the decision to attend. Three of the four civilian non-responders provided comments. One would base the decision on how near he was to completion of the program, and another has dropped the program due to work commitments. One of the remaining two wrote "not applicable," with both being fully reimbursed for tuition expenses by the employer. Table 11 is a summary of the 118 responses.

Price elasticity for civilian students is higher than for military students, with 63 percent (43/68) of civilian respondents indicating they would be willing to pay $100 or more per credit versus 36 percent (18/50) for the military. As an estimate of price elasticity of demand, arc elasticity

TABLE 11

TUITION LEVEL, DOLLARS PER CREDIT, CONSIDERED TOO HIGH

$/Credit	Military	Civilian	Total
$ 75	10	0	10
$ 80	5	6	11
$ 85	8	11	19
$ 90	5	4	9
$ 95	4	4	8
$100 +	18	43	61
Total	50	68	118

of Demand is used, and is computed as follows:

$$\text{---} \left(\frac{\text{Change in Quantity Demanded}}{\text{Sum of Quantities / 2}} * \frac{\text{Change in Price}}{\text{Sum of Prices /2}} \right)$$

Arc elasticity of demand for various increases in tuition is given in Table 12.

Table 12

ARC ELASTICITY OF DEMAND FOR TUITION INCREASES

$/Credit Increase	Military	Civilian	Total
118 Respondents to Question #9			
$ 5	5.47	1.43	3.03
$10	4.78	2.29	3.27
$15	3.95	2.01	2.88
$20	4.00	1.91	2.71
142 Total Respondents			
$ 5	3.16	.99	1.95
$10	3.79	2.21	2.91
$15	3.14	1.94	2.55
$20	3.09	1.85	2.39

Section one is based on answers from the 118 respondents to this question, while section two includes all 142 respondents. The military student is much more elastic than the civilian student in this comparison. This could be seen as evidence of the dissatisfaction of MCCM's with the program. Taking all 142 respondents into consideration, reaction to the different incremental increases was steady with 6 to 8 percent opting out at each step, with the exception of the $85/credit step, which accounted for a 13 percent drop, and the last step which accounts for 43 percent of respondents.

If it is assumed that the non-responders have shown an indifference to tuition increases due to some factor such as full employer tuition support, and that the responses to this survey reflect the attitudes of future students, then the projected registration figures in Table 6 change somewhat. The problem is to find the level of tuition that will maximize income. Table 13 shows the results of increasing tuition to various level on registration figures.

There is a definite reaction to increased tuition, with the higher the tuition, the fewer students. Table 14 shows the net result of increasing tuition to the various levels, assuming that civilian and military pay tuition, with a registration fee of $15/Student/Quarter. The elasticity of demand can be seen from Tables 13 and 14. Income is maximized at the current level of tuition.

TABLE 13

FORECASTED REGISTRATION LEVELS, VARIOUS TUITION LEVELS

Fiscal Year	Tuition, Dollars per Quarter Credit $75	$80	$85	$90	$95
	Forecasted Quarter Credit Hours (Forecasted Student Registration)				
*1987-1988					
Civilians	1,208	1,107	923	856	789
	(222)	(203)	(170)	(157)	(145)
Military	1,295	1,018	870	777	703
	(237)	(186)	(159)	(142)	(129)
Total	2,503	2,125	1,793	1,633	1,492
	(459)	(389)	(329)	(299)	(274)
*1988-1989					
Civilians	1,310	1,201	1,001	928	855
	(241)	(221)	(184)	(171)	(157)
Military	1,347	1,058	904	808	731
	(244)	(192)	(164)	(146)	(132)
Total	2,657	2,259	1,905	1,736	1,586
	(485)	(413)	(348)	(317)	(289)

TABLE 14

GROSS RECEIPTS FROM TUITION AND FEES, (in Dollars)

	$75	$80	$85	$90	$95
*1987-1988					
Tuition	187,725	170,000	152,405	146,970	141,740
Fees	6,885	5,835	4,935	4,485	4,110
Total	194,610	175,835	157,340	151,455	145,850
*1988-1989					
Tuition	199,275	180,720	161,925	156,240	150,670
Fees	7,275	6,195	5,220	4,755	4,335
Total	206,550	186,915	167,145	160,995	155,005

Of course, these figures are only as good as the assumptions made and the reliability of survey results.

Question #10. My tuition expenses are: ( )paid outright or fully reimbursed by my employer; ( )partially reimbursed by my employer; ( )my own responsibility.

Military responses were predicatable, with 91.4 percent (64/70) indicating that the Air Force paid all tuition. Four respondents indicated that tuition was reimbursed at a level less than but near 100 percent, and two respondents were paying their own expenses. The differences here can be accounted for by different occupations within, and branch of, the military, as perks vary for different groups.

The majority of civilian students, 63.9 percent (46/72), pay their own way. Of those receiving employer support, 20.8 percent (15/72) reported full reimbursement, while 15.3 percent (11/72) received partial reimbursement.

Overall, of the 142 responses, 79 (55.6 percent) received full employer support, 15 (10.6 percent) received partial employer support, and 48 (63.9 percent) were responsible for their own tuition.

When cross-referenced, survey Questions #9 and #10 show some interesting facts. Among those students whose tuition is fully paid by the employer, 36.7 percent (29/79) indicated they would opt not to attend at some point less than $100+. This does not seem to make any sense, unless they used this question as an opportunity to quantify their attitude for the

program, or were just giving an opinion as to what level they believed to be excessive. Twenty-three were non-responders, which probably means that tuition is not a concern to them, and they could be grouped with those checking $100+.

Fifteen students received partial employer support and 48 provided for their own expenses. Of this group, 54 percent checked the $100+ option. In each of these groups, there is a willingness by one-half to two-thirds of the members to pay $100+ per credit hour.

Question #11. Employment status: ( )Working full-time, 40 hours or more per week; ( )Working part-time; ( ) Not working.

The military students indicated that 98.6 percent (69/70) were working full-time, a predicatable response. One claimed part-time employment, which is not inconsistent with being military as members of the National Guard are in the M.B.A. program. The civilian sector had 87.5 percent (63/72) working full-time, three (4.2 percent) working part-time, and six (8.3 percent) not working. Of the 142 respondents, 132 (93 percent) work full-time.

Comments: Most of the comments of respondents have been included or summarized under the appropriate question number. However, there were some general comments which could not be categorized this way. One missile officer noted that the MMEP (Minuteman Education Program) is no longer the incentive it once was due to the Active Duty Service Commitment (ADSC)

required by the Air Force. To complete this program, the officer would have accumulated a two-year ADSC. He also questioned how many military personnel would be interested in this program after the new voucher system takes effect. Another area addressed related to the motivation of some military students, noting that many are just out to fill the "Masters Square." Evidently, this has become the unwritten educational standard due to the very competitive nature of promotion beyond the rank of Captain. The main objection was that it takes too long to complete the M.B.A. due to prerequisite (500 level) courses.

One civilian noted that there is a need for this type of program, as students come from Butte to attend, and that it would be a great loss if this program were to close because there are not any comparable programs to replace it.

CHAPTER III

THE M.B.A. PROGRAM SERVICE AREA

As pointed out in a previous section, students in the M.B.A. Program come from near and far, with over 13 percent traveling long distances. However, the other 87 percent of students live, and in most cases, work in the Great Falls area. The program is unique and can be expected to draw students from a wide area, but the primary service area is the Great Falls metropolitan area.

As noted in Table 9, 123 of 141 students responding to Question #4 reported living within 25 miles of the school. What this is describing is Cascade County.

The students of the A.F.I.T. - M.B.A. Program hardly constitute a cross section of the residents of Cascade County. As seen in Table 8, the vast majority of students are in the 25 - 34 age group with 86 of 140 survey respondents, or 61.4 percent. Of the civilian students in the program 58.6 percent (41/70) were from this group, and another 40 percent (28/70) from the 35 - 49 group. Table 15 is a breakdown of the population of Cascade County.

In actual numbers, Cascade County figures for the 25 - 34 group would be 14,042 with another 15,737 in the 35 - 49 group. The median age of current A.F.I.T. - M.B.A. students

TABLE 15

ESTIMATED POPULATION DATA, STATE AND COUNTY
AS OF DECEMBER 31, 1985
(Thousands)

	Total Population	Median Age	Percent of Population, By Age Group			
			18-24	25-34	35-49	50+
Cascade County	80.7	30.8	12.9	17.4	19.5	23.2
Great Falls	58.1	32.4	12.1	16.6	19.5	26.2
Suburban	22.6	27.1	15.2	19.1	19.5	15.5
STATE	836.7	31.0	11.8	18.0	18.3	24.4

SOURCE: 1985 Survey of Buying Power, Part II, Sales and Marketing Management, October 28, 1985, pages B-3 and C-115.

is 30, 33 for civilians, and 27 for the military. According to the 1980 Census, Montanans 25 years old and up with four or more years of college represented 17.5 percent of the population (79,000/451,000).[5] If This figure holds true across the state, Cascade County should have over 5,000 persons (potential M.B.A. students) in this group. As of March 15, 1987, the A.F.I.T. - M.B.A. Program has had 448 graduates, 62 of which were civilians.[6] The high profile of the military students is, in part, due to the replacement of 25 percent of the student pool each year.

Pessimism about the future is as common to Great Falls as chinook winds, usually with about as much substance. Even

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[5]Montana Department of Commerce, Montana Statistical Abstract, 1984, page 286.

[6]"MMEP Quarterly Report," Second Quarter 1987, Malmstrom Minuteman Education Program, A.F.I.T., Detachment No. 5.

the closure of the Anaconda Company smelter did not devastate the economy, unlike the effects felt in the Butte-Anaconda area. The population of Cascade County has declined only two percent in the last 15 years.[7] Other areas of the state have seen higher growth rates in the past, with declines being just as dramatic.

The economic base of Cascade County has several key elements. About 40 percent is related to Malmstrom Air Force Base with roughly another 30 percent related to Great Falls being a regional trade center. Great Falls is also noted for being a financial center and has recently been of increasing importance as a regional medical center.

> "While the economic base in Cascade County is not composed of glamorous, fast growth industries, it is also not oriented toward activities that are likely to disappear."
>
> "We look for modest increases in the Cascade County economy, due primarily to its growing role as a professional and medical center."[8]

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[7] Paul E. Polzin, "The Local Outlook: Introducing the New Forecasts for the Missoula, Billings, Great Falls, and Helena Areas," Montana Business Quarterly, Spring 1987, pp. 7 - 12.

[8] Paul E. Polzin, "The Outlook for 1986," Montana Business Quarterly, Spring 1986, page 20.

CHAPTER IV

PERSPECTIVES ON RECENT DEVELOPMENTS IN THE M.B.A. PROGRAM

Viewpoints of various groups in regard to the Air Force decision to change from the current A.F.I.T. - M.B.A. offering for missile officers, and, therefore, civilians, toward the tuition reimbursement plan as outlined in Appendix A are somewhat varied. Positions in regard to this matter were sought from four groups: Base Education, Malmstrom Air Force Base; University of Montana officials; the Great Falls Area Chamber of Commerce; and, the Great Falls Committee for Higher Education.

Base Education has been designated to administer the A.F.I.T. - M.B.A. Program at Malmstrom beginning October 1, 1987. Wayne Benson, Chief of Education Services, 341st CSG/DPE was interviewed July 10, 1987. The following information was obtained from this interview. The Air Force has left it to the individual bases to determine graduate level educational offerings at each facility. To this end, Malmstrom Base Education used survey results, one by a graduate student and the other designed by Base Education, to determine desired educational offerings at Malmstrom. Base Education conducted its survey of all potential graduate school candidates in early May, 1987.

Mr. Benson stressed that Base Education needs a program with a strong management base, and that the "Management Block" needs to be filled here at Malmstrom. A list of desired sub-areas was developed from the survey. The top three areas beginning with the most requested are Computer Science or Information Systems, International Relations, and Public Administration. The M.B.A. seems to be inconsistent with today's needs of the Air Force. According to Mr. Benson, "SAC (Strategic Air Command) needs managers, not businessmen." The new "Management Block" should consist of 45 credit hours, with 21 in a management base, 12 in the area of concentration, and 12 reserved for special topics. The University of Montana is currently in the process of proposing a new Master of Management curriculum to Base Education. The form of any new program would, presumably, be negotiable. While the Base Education facility is capable of teleconferencing, this is an area which has not been developed to-date. Mr. Benson noted that the Great Falls Vo-Tech Center has a teleconferencing facility. This fall, the University of Idaho will be offering masters degrees in electrical engineering, mechanical engineering, and computer science on a video tape format. There then seems to be a possibility for continuing to offer the M.B.A. in Great Falls via a different format.

University officials do not seem to be holding out much hope for the M.B.A. Program in Great Falls. On May 1, 1987

interviews were conducted with Dr. Richard Withycombe, Director of Graduate Studies of the School of Business Administration, and Dr. Donald Spencer, Associate Dean of the Graduate School. Dr. Withycombe noted that the Board of Regents had recently approved a Master of Administration degree as a possible replacement to the M.B.A. program at Malmstrom, which at the time seemed to be what the Air Force was requesting. In the interim, Air Force needs changed. The current M.B.A. program is accredited through the American Assembly of Collegiate Schools of Business (AACSB). This is an important distinction as there are over 650 instituitions offering M.B.A. degrees, yet less than one-third are accredited through the AACSB.[9] Regarding any replacement program for the M.B.A., Dr. Withycombe noted that it is assumed that the new program will not be accredited by the AACSB.

Dr. Spencer noted that the Great Falls M.B.A. program had been in operation since 1968 and that the program is a zero-sum proposition for the University, as the Air Force pays the bills. An alternative delivery system is being studied for a Billings M.B.A. program. The 1987 Legislature has authorized monies to setup a M.B.A. program administered by the University of Montana. To date, this is the only aspect of the proposal that is certain. According to Dr.

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[9] "A Seal of Approval Your MBA Should Have, Business Week, September 22, 1986, page 104.

Withycombe, the University has about one year to figure out what to do and how to do it.

Dr. Spencer indicated that teleconferencing may be an integral part of the new program, and that currently the University has a tenative agreement to secure satellite time for around $280-290 per hour. While teleconferencing may be in the future of the Great Falls M.B.A. Program, it has other problems which are not readily apparent. There has to be some resident employees to administer the program, technicians to setup and run equipment, lectures need to be video-taped, and there is need for periodic travel by instructors to the site of delivery. All these things cost money. According to Dr. Spencer, "Some Universities got into the business and are now trying to get out of it, because they can't afford to keep it up." When asked about using faculty commuting from Missoula to teach in Great Falls, more problems appeared. Demand for business faculty is high nationwide. Commuting is not popular, as it interferes with reseach schedules, professional service schedules, and faculty are lost to the campus for the day, or days in the case of Great Falls. The last point, being lost to the campus for that time, was stressed. Dr. Spencer noted that during registration, business classes are filled up early on the first day. Therefore, if they use one faculty member to teach in Great Falls for a quarter, they lose potential revenue from classes which could have been taught in Missoula. Dr. Spencer made

the point that the University will offer a quality program, or none at all. The Master of Management proposal has been given to Base Education for evaluation.

Mike Labriola, of the Great Falls Area Chamber of Commerce, in a phone interview July 21, 1987, stated that the Chamber has not taken a position on the Air Force decision and its effect on the M.B.A. program, and that it does not feel it would be appropriate to take a position at this time. He noted that a U.S. Senator from South Dakota voiced strong opposition to aspects of the Air Force plan regarding Ellsworth Air Force Base in Rapid City, to no avail.

The Great Falls Committee for Higher Education is a group of people, currently numbering 15, with the common purpose of pursuing higher educational opportunities for the people of the Great Falls area. Together they represent elements of business, education, Malmstrom, city government, the College of Great Falls, and the Great Falls Tribune. According to Gerry Jennings, one of the co-founders, the group was formed initially due to a Tribune article in November 1985 regarding SAC's intention to close the M.B.A. Program. The group has lobbied for higher education opportunities, recently speaking with Higher Education Commissioner Carrol Krause regarding the current situation in Great Falls. This group has kept away from lobbying for the M.B.A. program specifically, preferring to keep open other options that the State might be willing to pursue, for

example, the Master of Management curriculum. While it would certainly like to see the M.B.A. program continue in Great Falls, the primary objective of this group is increased higher educational opportunities in general, and does not feel this objective would be optimized by supporting any one particular program.[10]

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[10] Interview with Gerry Jennings, Great Falls Committee for Higher Education, July 20, 1987.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

When the Air Force began the Minuteman Education Program it had an understanding with the Universities involved that the program could be discontinued on relatively short notice. This is what has happened. Air Force needs have changed just as the needs of their personnel have changed. The last great change in direction occurred when it was decided to discontinue offering engineering degree opportunities in favor of the M.B.A. The M.B.A. Program has lasted 19 years at Malmstrom and has over 450 graduates to its credit.

One of the reasons for discontinuing the program is its cost. Total cost per graduate for the Air Force was given earlier. With all students, both military and civilian, taken as a group, the cost per credit hour rose from $120 in FY 77 to $347 in FY 85. Fiscal year 1987 appears in the area of $205/credit. Part of the reason for this rise has been mentioned: the crew reduction plan started in 1977. In that one year, cost per credit increased by $63. Since this time, civilians have been allowed into the program on a space available basis, and a lot of space has been available.

The high cost nature of this program is due to a great extent to the Air Force need for multiple sessions of the

same class to be offered per week. The need is legitimate as it fits the scheduling needs of missile officers. Still, one professor teaching one class (one preparation, three times per week) each quarter is expensive. In 1985, the average faculty salary for a public institution of higher education, all ranks included, was $31,200 plus $7,000 in benefits.[11] This is multiplied by six faculty members. If faculty size could be cut in half, an annual savings of nearly $160,000 in salaries, benefits, direct and indirect costs could be realized. At the budgeted figures for this year, the savings could have reduced cost per credit to $153. This is an area which needs to be examined carefully if the M.B.A. program is to remain in Great Falls. As seen in Table 6, registration levels are forecasted to rise, with civilian levels becoming more prominent with time. Forecast levels for FY 1989 will need to be revised next year due to the method of forecasting, but this does show levels to be increasing.

To have expenses meet income, either expenses have to be cut or income increased. Income can be raised by either more students or raising tuition. As noted previously, survey data indicate that the reaction of current students, and presumably future students, toward an increase in tuition would cause many to drop out of the program. Revenue from

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[11] Institutions of Higher Education--Average Salaries and Fringe Benefits for Faculty Members, By Type of Control: 1970 to 1985, U.S. Bureau of the Census, Statistical Abstract of the United States, 1986, page 157.

increasing tuition would not be enough to compensate for decreased registrations. Even if all students currently in the program were willing to pay $100 per credit, the amount raised would amount to less than half of the budget for this year.

The bottom line is that, due to its current structure, this program is too expensive to be funded solely through tuition. Some form of State support will, in all probability, be necessary to keep tuition costs down. This support, combined with substantial budget reductions by the program, could make it possible to continue to offering the M.B.A. in Great Falls. Substantial savings could be realized if three faculty positions were eliminated, but what effect would this have on quality? Jack R. Wentworth, Indiana University's Business School Dean sardonically stated, "We now have schools with three business faculty members offering MBA's."[12] In itself, this is not the answer.

Projected registration figures do not take into account the impact of the new re-fueling mission at Malmstrom. The first plane of the 301st Air Refueling Wing, 91st Air Refueling Squadron is scheduled to arrive at Malmstrom on October 1, 1988. This mission will add 700 new military and civilian personnel to Malmstom.[13] Further down the road,

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[12]John A. Byrne, "The Battle of the B-Schools Is Getting Bloodier," Business Week, March 24, 1986, pp. 61-70.

[13]"First Contract Let For KC-135s," Great Falls Tribune, June 2, 1987.

Malmstrom has been chosen as the first base to receive the Midgetman missile. This is expected to have a major impact on the Great Falls area.

The end of the current M.B.A. Program is two years away. Perhaps the University's study of the proposed Billings M.B.A. program will have some tangible benefits for the Great Falls program. This program has shown that there is a market for a M.B.A. program which caters to the needs of non-traditional students. The survey has shown that the average student: 1) Works full-time while taking two classes per quarter; 2) Is willing to pay relatively high tuition for the privilege; and, 3) Is unable to attend the traditional M.B.A. program in Missoula due to a variety of factors.

> "Colleges must not hunt exclusively for traditional students for the programs that they have offered historically, but they must seek new types of students for new types of programs. The demand for higher education is not independent of the supply. Demand can depend on the kinds of institutions available, on the convenience of times and places, on tuition charges and financial aid, and on work release time from employers. Demand is highly flexible and expansible depending on the kind of education offered and the terms on which it is available."[14]

The Great Falls M.B.A. student is, indeed, non-traditional. This program is a unique asset for Montana in that it has students from many backgrounds from all across the United States. This diversity manifests itself in the

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[14]Lois R. Smith and S. Tamer Cavusgil, "Marketing Planning for Colleges and Universities," Long Range Planning, December 1984, pp. 104-117.

classroom, giving students exposure to viewpoints and experiences the average Missoula M.B.A. student will probably not receive. This program is worthy of continuance.

Appendix A

Talking Paper on Missile Crew Member Education Program (MCMEP)

PURPOSE

- To provide base Education Services Officers (ESOs) and AFIT Detachment Commanders (Det Cos) information on MCMEP, formerly known as the Minuteman Education Program

DISCUSSION

- MCMEP will provide graduate education opportunities for missile crew members beginning 1 Oct 87 through two separate programs

  -- Program 1: Master of Business Administration (MBA) phase out program under contract with single university at each base

     --- Crew members who registered for current MMEP MBA classes prior to 1 Jan 87 may complete their studies subject to university approval

     --- Participants incur a two-year concurrent Active Duty Service Commitment (ADSC) as they do now under the current program

     --- Contracts include an increased benefit provision - full payment of book costs in lieu of the current thesis allowance

  -- Program 2: Crew member may participate in any locally available regionally accredited graduate program. A voucher system will be used to authorize 100 percent payment of tuition and book costs to universities

     --- Participants must possess a baccalaureate degree and meet university admission requirements

     --- Voucher system is authorized for missile crew members (AFSC 1823 or 1825) or former missile crew members, as follows:

        ---- An officer who is assigned as a missile crew member of a complex of underground Minuteman or Peacekeeper missiles at one of the SAC bases; or

        ---- An officer who was assigned as a missile crew member on 1 Oct 87 and subsequently transferred to wing staff duty

--- Eligibility ends when a participant is permanently reassigned and departs for another duty station (PCS)

--- Participants incur a two-year concurrent ADSC

- Base Education Services Officers (ESOs) will administer the MCMEP Program 1 (MBA phase out) and Program 2 (voucher system)

  -- MCMEP participants will register for classes through the Education Center

  -- ESO will provide wing scheduler with student names and class schedules NLT 45 days prior to class start date

  -- Wing scheduler will integrate duty and class schedules

- Interim graduate studies options

  -- Missile crew members who plan to participate in the voucher system may use tuition assistance (75 percent) until 100 percent funding is available 1 Oct 87

  -- Since the current MBA program provides full funding, missile crew members may wish to participate in MBA courses if they can be transferred for credit to other locally available programs

DCS APPROVED
Ms Fowler/DPAE/2552/jgt/19 Mar 87

Appendix B

Time Series Decomposition Data, MCCM Students Registered Fall 1976 - Spring 1987

A	B	C	D	E	F	G
1	FALL 76	1	116	109	132	16
2	WINT 77	2	106	98	91	-15
3	SPRG 77	3	86	84	73	-13
4	SUMM 77	4	66	80	53	-13
5	FALL 77	1	74	69	65	-9
6	WINT 78	2	73	68	63	-10
7	SPRG 78	3	62	60	57	-5
8	SUMM 78	4	34	41	45	11
9	FALL 78	1	47	44	57	10
10	WINT 79	2	58	54	57	-1
11	SPRG 79	3	51	50	53	2
12	SUMM 79	4	30	36	42	12
13	FALL 79	1	56	52	54	-2
14	WINT 80	2	50	46	54	4
15	SPRG 80	3	45	44	51	6
16	SUMM 80	4	38	46	41	3
17	FALL 80	1	49	46	53	4
18	WINT 81	2	52	48	53	1
19	SPRG 81	3	56	55	50	-6
20	SUMM 81	4	48	58	40	-8
21	FALL 81	1	51	48	52	1
22	WINT 82	2	57	53	52	-5
23	SPRG 82	3	53	52	49	-4
24	SUMM 82	4	44	53	40	-4
25	FALL 82	1	59	55	51	-8
26	WINT 83	2	49	45	52	3
27	SPRG 83	3	52	51	49	-3
28	SUMM 83	4	36	44	39	3
29	FALL 83	1	59	55	51	-8
30	WINT 84	2	55	51	51	-4
31	SPRG 84	3	42	41	48	6
32	SUMM 84	4	39	47	39	0
33	FALL 84	1	41	38	50	9
34	WINT 85	2	36	33	51	15
35	SPRG 85	3	40	39	48	8
36	SUMM 85	4	40	48	39	-1
37	FALL 85	1	53	50	50	-3
38	WINT 86	2	42	39	51	9
39	SPRG 86	3	40	39	48	8
40	SUMM 86	4	41	50	39	-2
41	FALL 86	1	50	47	50	0
42	WINT 87	2	54	50	50	-4
43	SPRG 87	3	51	50	48	-3

KEY

A = Period
B = Quarter
C = Season
D = Observed Value
E = Deseasonalized Value
F = Forecast Value
G = Error

SEASONAL INDICES

1	1.068652
2	1.080985
3	1.024951
4	0.825412

Appendix C

Time Series Decomposition Data, MCCM Quarter Credit Hours
Fall 1976 - Spring 1987

A	B	C	D	E	F	G
1	FALL 76	1	629	592	705	76
2	WINT 77	2	577	509	508	-69
3	SPRG 77	3	444	430	390	-54
4	SUMM 77	4	352	456	264	-88
5	FALL 77	1	373	351	340	-33
6	WINT 78	2	443	391	347	-96
7	SPRG 78	3	311	301	305	-6
8	SUMM 78	4	158	205	222	64
9	FALL 78	1	253	238	300	47
10	WINT 79	2	322	284	314	-8
11	SPRG 79	3	263	255	282	19
12	SUMM 79	4	180	233	209	29
13	FALL 79	1	313	295	284	-29
14	WINT 80	2	268	237	300	32
15	SPRG 80	3	203	197	272	69
16	SUMM 80	4	159	206	202	43
17	FALL 80	1	213	200	276	63
18	WINT 81	2	246	217	293	47
19	SPRG 81	3	326	316	265	-61
20	SUMM 81	4	251	325	198	-53
21	FALL 81	1	277	261	271	-6
22	WINT 82	2	273	241	288	15
23	SPRG 82	3	275	266	261	-14
24	SUMM 82	4	196	254	195	-1
25	FALL 82	1	347	326	267	-80
26	WINT 83	2	289	255	284	-5
27	SPRG 83	3	252	244	259	7
28	SUMM 83	4	163	211	193	30
29	FALL 83	1	312	294	265	-47
30	WINT 84	2	313	276	282	-31
31	SPRG 84	3	254	246	256	2
32	SUMM 84	4	173	224	191	18
33	FALL 84	1	195	183	263	68
34	WINT 85	2	212	187	280	68
35	SPRG 85	3	210	203	255	45
36	SUMM 85	4	200	259	190	-10
37	FALL 85	1	269	253	262	-7
38	WINT 86	2	253	223	278	25
39	SPRG 86	3	222	215	254	32
40	SUMM 86	4	224	290	189	-35
41	FALL 86	1	265	249	260	-5
42	WINT 87	2	296	261	277	-19
43	SPRG 87	3	297	288	252	-45

KEY

A = Period
B = Quarter
C = Season
D = Observed Value
E = Deseasonalized Value
F = Forecast Value
G = Error

SEASONAL INDICES

1	1.062816
2	1.132694
3	1.032601
4	0.771889

Appendix D

Time Series Decomposition Data, non-MCCM Military Students Registered, Fall 1976 - Spring 1987

A	B	C	D	E	F	G
1	FALL 76	1	11	11	9	-2
2	WINT 77	2	8	7	10	2
3	SPRG 77	3	9	8	9	0
4	SUMM 77	4	8	10	7	-1
5	FALL 77	1	9	9	8	-1
6	WINT 78	2	7	6	9	2
7	SPRG 78	3	4	4	8	4
8	SUMM 78	4	4	5	6	2
9	FALL 78	1	7	7	7	0
10	WINT 79	2	8	7	8	0
11	SPRG 79	3	8	7	8	0
12	SUMM 79	4	4	5	6	2
13	FALL 79	1	6	6	7	1
14	WINT 80	2	10	9	7	-3
15	SPRG 80	3	9	8	7	-2
16	SUMM 80	4	4	5	5	1
17	FALL 80	1	7	7	7	0
18	WINT 81	2	8	7	7	-1
19	SPRG 81	3	11	10	7	-4
20	SUMM 81	4	6	7	5	-1
21	FALL 81	1	10	10	7	-3
22	WINT 82	2	9	8	7	-2
23	SPRG 82	3	9	8	7	-2
24	SUMM 82	4	10	12	6	-4
25	FALL 82	1	5	5	7	2
26	WINT 83	2	10	9	8	-2
27	SPRG 83	3	5	5	8	3
28	SUMM 83	4	4	5	6	2
29	FALL 83	1	5	5	7	2
30	WINT 84	2	5	5	9	4
31	SPRG 84	3	7	6	9	2
32	SUMM 84	4	7	8	7	0
33	FALL 84	1	7	7	8	1
34	WINT 85	2	6	5	9	3
35	SPRG 85	3	10	9	10	0
36	SUMM 85	4	7	8	8	1
37	FALL 85	1	8	8	9	1
38	WINT 86	2	13	12	11	-2
39	SPRG 86	3	9	8	11	2
40	SUMM 86	4	11	13	9	-2
41	FALL 86	1	12	12	11	-1
42	WINT 87	2	12	11	12	0
43	SPRG 87	3	14	13	12	-2

KEY

A = Period
B = Quarter
C = Season
D = Observed Value
E = Deseasonalized Value
F = Forecast Value
G = Error

SEASONAL INDICES

1	0.992277
2	1.102160
3	1.078581
4	0.826983

Appendix E

Time Series Decomposition Data, non-MCCM Military
Quarter Credit Hours, Fall 1976 - Spring 1987

A	B	C	D	E	F	G
1	FALL 76	1	57	61	46	-11
2	WINT 77	2	81	68	56	-25
3	SPRG 77	3	44	42	48	4
4	SUMM 77	4	50	61	36	-14
5	FALL 77	1	36	38	40	4
6	WINT 78	2	27	23	49	22
7	SPRG 78	3	19	18	42	23
8	SUMM 78	4	19	23	32	13
9	FALL 78	1	35	37	35	0
10	WINT 79	2	42	35	44	2
11	SPRG 79	3	37	35	38	1
12	SUMM 79	4	18	22	29	11
13	FALL 79	1	19	20	33	14
14	WINT 80	2	53	45	40	-13
15	SPRG 80	3	32	30	36	4
16	SUMM 80	4	15	18	27	12
17	FALL 80	1	27	29	31	4
18	WINT 81	2	28	24	39	11
19	SPRG 81	3	61	58	35	-26
20	SUMM 81	4	37	45	27	-10
21	FALL 81	1	50	53	32	-18
22	WINT 82	2	60	51	41	-19
23	SPRG 82	3	65	62	37	-28
24	SUMM 82	4	51	62	29	-22
25	FALL 82	1	39	42	34	-5
26	WINT 83	2	56	47	44	-12
27	SPRG 83	3	20	19	40	20
28	SUMM 83	4	25	30	32	7
29	FALL 83	1	29	31	38	9
30	WINT 84	2	37	31	49	12
31	SPRG 84	3	39	37	45	6
32	SUMM 84	4	40	49	37	-3
33	FALL 84	1	34	36	43	9
34	WINT 85	2	37	31	57	20
35	SPRG 85	3	51	48	53	2
36	SUMM 85	4	30	37	43	13
37	FALL 85	1	45	48	51	6
38	WINT 86	2	72	61	67	-5
39	SPRG 86	3	52	49	62	10
40	SUMM 86	4	60	73	50	-10
41	FALL 86	1	80	85	60	-20
42	WINT 87	2	65	55	79	14
43	SPRG 87	3	83	79	73	-10

KEY

A = Period
B = Quarter
C = Season
D = Observed Value
E = Deseasonalized Value
F = Forecast Value
G = Error

SEASONAL INDICES

1	0.939715
2	1.184150
3	1.056333
4	0.819803

Appendix F

Time Series Decomposition Data, Civilian Students Registered
Fall 1976 - Spring 1987

A	B	C	D	E	F	G
1	FALL 76	1	10	8	5	-5
2	WINT 77	2	6	5	6	0
3	SPRG 77	3	8	8	6	-2
4	SUMM 77	4	2	3	5	3
5	FALL 77	1	7	6	10	3
6	WINT 78	2	11	10	11	0
7	SPRG 78	3	10	10	11	1
8	SUMM 78	4	6	9	8	2
9	FALL 78	1	15	12	16	1
10	WINT 79	2	18	16	16	-2
11	SPRG 79	3	13	13	16	3
12	SUMM 79	4	11	17	11	0
13	FALL 79	1	24	20	22	-2
14	WINT 80	2	19	17	21	2
15	SPRG 80	3	19	19	20	1
16	SUMM 80	4	14	22	14	0
17	FALL 80	1	27	22	27	0
18	WINT 81	2	27	24	27	0
19	SPRG 81	3	26	26	25	-1
20	SUMM 81	4	21	33	17	-4
21	FALL 81	1	36	30	33	-3
22	WINT 82	2	32	28	32	0
23	SPRG 82	3	25	25	30	5
24	SUMM 82	4	24	38	19	-5
25	FALL 82	1	34	28	39	5
26	WINT 83	2	36	32	37	1
27	SPRG 83	3	34	34	34	0
28	SUMM 83	4	25	39	22	-3
29	FALL 83	1	45	37	44	-1
30	WINT 84	2	49	43	42	-7
31	SPRG 84	3	42	41	39	-3
32	SUMM 84	4	29	45	25	-4
33	FALL 84	1	43	35	50	7
34	WINT 85	2	43	38	47	4
35	SPRG 85	3	48	47	44	-4
36	SUMM 85	4	21	33	28	7
37	FALL 85	1	41	34	55	14
38	WINT 86	2	44	39	52	8
39	SPRG 86	3	44	43	48	4
40	SUMM 86	4	35	55	31	-4
41	FALL 86	1	59	48	61	2
42	WINT 87	2	64	57	57	-7
43	SPRG 87	3	61	60	53	-8

KEY

A = Period
B = Quarter
C = Season
D = Observed Value
E = Deseasonalized Value
F = Forecast Value
G = Error

SEASONAL INDICES

1	1.220230
2	1.127885
3	1.013069
4	0.638816

Appendix G

Time Series Decomposition Data, Civilian Quarter Credit Hours
Fall 1976 - Spring 1987

A	B	C	D	E	F	G
1	FALL 76	1	41	32	18	-23
2	WINT 77	2	22	19	24	2
3	SPRG 77	3	27	27	27	0
4	SUMM 77	4	6	10	19	13
5	FALL 77	1	39	31	50	11
6	WINT 78	2	64	56	53	-11
7	SPRG 78	3	54	54	52	-2
8	SUMM 78	4	21	36	34	13
9	FALL 78	1	77	61	82	5
10	WINT 79	2	87	76	82	-5
11	SPRG 79	3	67	67	77	10
12	SUMM 79	4	45	77	49	4
13	FALL 79	1	139	110	115	-24
14	WINT 80	2	101	88	112	11
15	SPRG 80	3	109	109	103	-6
16	SUMM 80	4	70	119	64	-6
17	FALL 80	1	130	103	147	17
18	WINT 81	2	147	128	141	-6
19	SPRG 81	3	135	136	128	-7
20	SUMM 81	4	113	193	79	-34
21	FALL 81	1	183	145	179	-4
22	WINT 82	2	150	130	170	20
23	SPRG 82	3	103	103	154	51
24	SUMM 82	4	108	184	94	-14
25	FALL 82	1	206	163	211	5
26	WINT 83	2	218	189	199	-19
27	SPRG 83	3	176	177	179	3
28	SUMM 83	4	154	262	109	-45
29	FALL 83	1	244	193	243	-1
30	WINT 84	2	262	228	229	-33
31	SPRG 84	3	213	214	204	-9
32	SUMM 84	4	129	220	124	-5
33	FALL 84	1	238	188	276	38
34	WINT 85	2	209	182	258	49
35	SPRG 85	3	258	259	230	-28
36	SUMM 85	4	102	174	139	37
37	FALL 85	1	227	179	308	81
38	WINT 86	2	230	200	287	57
39	SPRG 86	3	221	222	255	34
40	SUMM 86	4	169	288	154	-15
41	FALL 86	1	313	247	340	27
42	WINT 87	2	371	322	317	-54
43	SPRG 87	3	355	356	280	-75

KEY

A = Period
B = Quarter
C = Season
D = Observed Value
E = Deseasonalized Value
F = Forecast Value
G = Error

SEASONAL INDICES

1	1.265737
2	1.151428
3	0.995952
4	0.586883

Appendix H

Time Series Decomposition Data, All Students Registered Fall 1976 - Spring 1987

A	B	C	D	E	F	G
1	FALL 76	1	137	124	107	-30
2	WINT 77	2	129	117	105	-24
3	SPRG 77	3	103	101	95	-8
4	SUMM 77	4	76	99	70	-6
5	FALL 77	1	90	81	99	9
6	WINT 78	2	91	82	97	6
7	SPRG 78	3	76	75	88	12
8	SUMM 78	4	44	57	65	21
9	FALL 78	1	69	62	93	24
10	WINT 79	2	84	76	91	7
11	SPRG 79	3	72	71	83	11
12	SUMM 79	4	45	59	62	17
13	FALL 79	1	86	78	89	3
14	WINT 80	2	79	71	88	9
15	SPRG 80	3	73	72	81	8
16	SUMM 80	4	56	73	60	4
17	FALL 80	1	83	75	87	4
18	WINT 81	2	87	79	87	0
19	SPRG 81	3	93	91	80	-13
20	SUMM 81	4	75	98	60	-15
21	FALL 81	1	97	88	87	-10
22	WINT 82	2	98	89	88	-10
23	SPRG 82	3	87	85	81	-6
24	SUMM 82	4	78	102	62	-16
25	FALL 82	1	98	89	90	-8
26	WINT 83	2	95	86	91	-4
27	SPRG 83	3	91	89	85	-6
28	SUMM 83	4	65	85	65	0
29	FALL 83	1	109	98	95	-14
30	WINT 84	2	109	99	96	-13
31	SPRG 84	3	93	91	90	-3
32	SUMM 84	4	75	98	69	-6
33	FALL 84	1	91	82	102	11
34	WINT 85	2	85	77	104	19
35	SPRG 85	3	98	96	98	0
36	SUMM 85	4	68	89	75	7
37	FALL 85	1	102	92	111	9
38	WINT 86	2	99	89	113	14
39	SPRG 86	3	93	91	107	14
40	SUMM 86	4	87	113	83	-4
41	FALL 86	1	121	109	122	1
42	WINT 87	2	130	117	125	-5
43	SPRG 87	3	126	124	119	-7

KEY

A = Period
B = Quarter
C = Season
D = Observed Value
E = Deseasonalized Value
F = Forecast Value
G = Error

SEASONAL INDICES

1	1.106883
2	1.106567
3	1.019095
4	0.767455

Appendix I

Time Series Decomposition Data, All Students,
Quarter Credit Hours, Fall 1976 - Spring 1987

A	B	C	D	E	F	G
1	FALL 76	1	727	651	570	-157
2	WINT 77	2	680	594	570	-110
3	SPRG 77	3	515	508	493	-22
4	SUMM 77	4	408	562	345	-63
5	FALL 77	1	448	401	520	72
6	WINT 78	2	534	467	522	-12
7	SPRG 78	3	384	379	453	69
8	SUMM 78	4	198	273	319	121
9	FALL 78	1	365	327	483	118
10	WINT 79	2	451	394	487	36
11	SPRG 79	3	367	362	426	59
12	SUMM 79	4	243	335	301	58
13	FALL 79	1	471	422	459	-12
14	WINT 80	2	422	369	467	45
15	SPRG 80	3	344	339	411	67
16	SUMM 80	4	244	336	293	49
17	FALL 80	1	370	331	449	79
18	WINT 81	2	421	368	460	39
19	SPRG 81	3	522	515	408	-114
20	SUMM 81	4	401	553	293	-108
21	FALL 81	1	510	457	453	-57
22	WINT 82	2	483	422	467	-16
23	SPRG 82	3	443	437	418	-25
24	SUMM 82	4	355	489	302	-53
25	FALL 82	1	592	530	470	-122
26	WINT 83	2	563	492	489	-74
27	SPRG 83	3	448	442	439	-9
28	SUMM 83	4	342	471	320	-22
29	FALL 83	1	585	524	501	-84
30	WINT 84	2	612	535	524	-88
31	SPRG 84	3	506	499	474	-32
32	SUMM 84	4	342	471	347	5
33	FALL 84	1	467	418	546	79
34	WINT 85	2	458	400	573	115
35	SPRG 85	3	519	512	520	1
36	SUMM 85	4	332	457	382	50
37	FALL 85	1	541	484	604	63
38	WINT 86	2	555	485	636	81
39	SPRG 86	3	495	488	579	84
40	SUMM 86	4	453	624	426	-27
41	FALL 86	1	658	589	675	17
42	WINT 87	2	732	640	712	-20
43	SPRG 87	3	735	725	650	-85

KEY

A = Period
B = Quarter
C = Season
D = Observed Value
E = Deseasonalized Value
F = Forecast Value
G = Error

SEASONAL INDICES

1	1.116846
2	1.143986
3	1.013466
4	0.725702

Appendix J

Forecast Reliability Measures

In Appendices B through I, column G lists the forecast error for each quarter. In a few quarters, the forecast and observed values were equal. But this is rare. A forecast is only an estimate of future events based on observations of past activity. There are many methods of evaluating forecasts. The following three methods were chosen for ease in computation and ease in understanding the figures obtained:

Mean Absolute Deviation (MAD)

> "The MAD is a useful measure of average forecast error, i.e., the difference between the forecast demand and the actual demand. It is similar to standard deviation but easier to calculate because it does not require squaring numbers or taking square roots."[15]

$$MAD = \frac{\sum_{t=1}^{n} \left| y_t - f_t \right|}{n}$$

y = Actual demand
f = Forecasted demand
t = Time period
n = Number of observations

Mean Absolute Percentage Error (MAPE)

This is the absolute difference between forecast demand and actual demand expressed as a percentage of actual demand.

> "The advantage of MAPE is that it allows comparisons among different series which are not possible with

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[15] James B. Dilworth, Production and Operations Management: Manufacturing and Non-Manufacturing, 2nd ed. (New York: Random House, 1983), pp. 82-83.

the MSE."[16]

$$MAPE = \frac{\sum_{t=1}^{n} \left| \frac{e_t}{y_t} \right|}{n} \times 100$$

y = Actual demand
e = Forecast error
t = Time period
n = Number of observations

Square Root of the Mean Squared Error(MSE)

The mean squared error, MSE, is commonly used to evaluate forecasts. However, the figures provided can be quite large, as errors are squared. Taking the square root of the MSE, "...results in a number that is expressed in the same units of measure as the actual observations."[17]

$$MSE = \sqrt{\frac{\sum_{t=1}^{n} \left(\frac{y_t}{f_t} \right)^2}{n}}$$

y = Actual demand
f = Forecast error
t = Time period
n = Number of observations

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[16] Spyros Makridakis and Steven C. Wheelwright, Interactive Forecasting: Univariate and Multivariate Methods, 2nd ed.,(San Francisco: Holden-Day, Inc., 1978), page 19.

[17] Wayne W. Daniel and James C. Terrell, Business Statistics, 4th ed. (Boston: Houghton Mifflin Co., 1986), page 645.

Appendix K

GREAT FALLS M.B.A. STUDENT SURVEY

1. How did you first learn about the M.B.A. program in Great Falls?(Check one)
   ( )Base Education ( )Friend
   ( )Detachment Commander ( )Co-worker
   ( )University representative ( )Employer
   ( )University Catalog ( )Other_____

2. Why did you decide to attend here instead of Missoula?
   ( ) Unable to relocate due to commitments.
   ( ) Preferred the Great Falls program.Why?_____
   _____
   ( ) Other(specify)_____

3. In what year did you receive your Bachelor's Degree?_____

4. What was your undergraduate major?_____

5. To the nearest mile, how far is the one-way commute from home to school?_____

6. On average, the number of classes I take per quarter is:
   ( )one ( )two ( )three ( )four

7. When do you anticipate completing your M.B.A. degree requirements? (Month/Year)_____

8. The days and/or times that I could **not** attend class are: [Place an X in those boxes]

	SUN	MON	TUE	WED	THU	FRI	SAT
9a - 12p							
12p - 3p							
3p - 6p							
6p - 9p							

9. Currently, tuition is $75/credit. At what level ($/credit) would you consider the tuition too expensive and opt not to attend? ( )$75 ( )$80
   ( )$85 ( )$90 ( )$95 ( )$100 or more.

10. My tuition expenses are:
    ( ) paid outright or fully reimbursed by my employer.
    ( ) partially reimbursed by my employer.
    ( ) my own responsibility.

11. Employment status:
    ( ) Working full-time, 40 hours or more per week.
    ( ) Working part-time.
    ( ) Not working.

12. Personal information: Age_____ Sex_____
( )Military ( )Military Dependent ( )Civilian

Sources Consulted

Books

Daniel, Wayne W., and Terrell, James C. Business Statistics, 4th ed. Boston: Houghton Mifflin Co., 1986.

Dilworth, James R. Production and Operations Management: Manufacturing and Non-Manufacturing, 2nd ed. New York: Random House, 1983.

Levin, Richard I.; Rubin, David S.; and, Stinson, Joel P. Quantitative Approaches to Management, 6th ed. New York: McGraw-Hill Book Company, 1986.

Makridakis, Spyros, and Wheelwright, Steven C. Interactive Forecasting: Univariate and Multivariate Methods, 2nd ed. San Francisco: Holden-Day, Inc., 1978.

Mansfield, Edwin. Principles of Microeconomics, 3rd. ed. New York: W. W. Norton and Co., 1980.

U.S. Bureau of the Census. Statistical Abstract of the United States: 1986, 106th ed. Washington, D.C., 1985.

Periodicals

Bernard, Clark L., and Beaven, Douglas. "Containing the Costs of Higher Education." Journal of Accountancy (October 1985): 78-80+.

Byrne, John A. "The Battle of the B-Schools Is Getting Bloodier." Business Week, March 24, 1986, pp. 60+.

Byrne, John A. "A Seal of Approval Your MBA Should Have." Business Week, September 22, 1986, page 104.

"Colleges Recruit More Than Just Athletes," Advertising Age, August 23, 1984, page 54.

"First Contract Let For KC-135s." Great Falls Tribune, June 2, 1987.

Murphy, Liz. "Market or Perish!" Sales and Marketing Management, May 13, 1985, pp. 50-53.

Polzin, Paul E. "The Local Outlook for 1986: Billings, Great Falls, Helena, and Missoula." Montana Business Quarterly 24 (Spring 1986): 14-22.

Polzin, Paul E. "The Local Outlook: Introducing the New Forecasts for the Missoula, Billings, Great Falls, and Helena Areas." Montana Business Quarterly 25 (Spring 1987): 7-12.

Ross, Irvin. "Why College Bills Don't Level Off," Fortune, September 30, 1985, pp. 66-71.

Smith, Lois R., and Cavusgil, S. Tanner. "Marketing Planning for Colleges and Universities," Long Range Planning, December 1984, pp. 104-117.

Spiller, Rex, and Housel, Thomas J. "SMR Forum: Video Teleconferencing--A New Training Tool," Sloan Management Review, Fall 1985, pp. 57-62.

Tyson, John. "New Promise of Video Teleconferencing." FE, June 1985, pp. 41-44.

"1985 Survey of Buying Power, Part II." Sales and Marketing Management, October 28, 1985, page B-3, and page C-115.

U.S. Department of Labor, Bureau of Labor Statistics, CPI Detailed Report, October 1981 through March 1987.

Other Sources

Churchill, Geoffrey. Stat+, a statistical analysis system. Houghton Mifflin Co., 1986.

Department of the Air Force, Air University, A.F.I.T., Minuteman Education Program Three Year Plan FY 79-81, "Approximate MMEP Contract Costs FY 71 - FY 77," page 3-31.

Department of the Air Force, Air University, A.F.I.T., Minuteman Education Program Three Year Plan FY 86-88, "Cost Per Enrollee, Per DoD Graduate," page 3-26

Department of the Air Force, DPAE/2552. "Talking Paper On Missile Crew Member Education Program (MCMEP)."

Fogelberg, Cpt. James. Commander, A.F.I.T. Detachment No.5, Malmstrom Air Force Base, Great Falls, Montana. Interview, April 6, 1987.

Gianchetta, Dr. Larry. Dean, School of Business Administration, University of Montana. Interview, May 1, 1987.

Spencer, Dr.Donald. Associate Dean, Graduate School, University of Montana. Interview, May 1, 1987.

Withycombe, Dr. Richard. Director of Graduate Studies of the School of Business Administration, University of Montana. Interview, May 1, 1987.

Montana Department of Commerce, "Years of School Completed: 1980," Montana Statistical Abstract, 1984, page 286.

Malmstrom Minuteman Education Program, A.F.I.T. Detachment No. 5. "Public Voucher for Purchases and Services Other Than Personal." October 1, 1976 through September 30, 1986.

Malmstrom Minuteman Education Program, A.F.I.T. Detachment No. 5. "MMEP Quarterly Report." Second Quarter 1987.

University of Montana. Graduate Programs and Admissions 1987 - 1989, University of Montana. Number 602 (March 1987). UM Printing Services.

University of Montana. "Malmstrom MMEP Budget," FY 1982 through FY 1987.

University of Montana. "Registration List, AFIT MBA Program," fall quarter, 1976, through spring quarter, 1987.